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January 17, 2019

Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12th Street SW  
Washington, DC 20554

Re: 5GAA Petition for Waiver to Allow Deployment of Cellular Vehicle-to-Everything (C-V2X) Technology in the 5.9 GHz Band; GN Docket 18-357 (the “**Waiver**”)

Dear Ms. Dortch:

As a member of the 5G Automotive Association (“5GAA”), InterDigital writes in strong support of the Waiver request submitted by 5GAA. Throughout his tenure at the Federal Communications Commission (“Commission”), Chairman Ajit Pai has sought to ensure that the agency’s regulatory regimes accurately reflect the current realities of the marketplaces they address. Ultimately, this emphasis has benefitted consumers in the form of access to better quality services at lower prices. The Commission can take another action consistent with this approach by granting 5GAA’s waiver request to allow for the near-term deployment of Cellular Vehicle-to-Everything (“C-V2X”) technology in the upper 20 megahertz of the 5.9 GHz band. Not only will a grant of the waiver request better reflect the realities of the current marketplace, but it also will ensure that America is not left behind as the technology continues to progress.

If you have any questions about these comments, please do not hesitate to contact me.

Regards,

s/Robert S. Stien/

Robert S. Stien  
Vice President, Global Government Relations &  
Regulatory Affairs

Attachment

## **Comments of InterDigital, Inc., in Support of the “5GAA Petition for Waiver to Allow Deployment of Cellular Vehicle-to-Everything (C-V2X) Technology in the 5.9 GHz Band”**

### **I. Introduction**

#### *A. Corporate overview*

InterDigital was founded in 1972 with the objective of developing advanced wireless technologies. It became a publicly traded company in 1981 and is now a significant commercial research and engineering organization, with a long history of investment in researching, developing, patenting and licensing technologies that enable and enhance wireless telecommunications, including 2G, 3G, 4G, 5G and IEEE 802-related products and networks. In 2017, the company’s total revenues were \$532.9 million, with current revenues predominantly derived from licensing patents covering innovations developed by the company’s scientists and engineers.

InterDigital is actively engaged in and committed to long-term research. It employs close to 200 research and development (“**R&D**”) staff in nine locations in five countries. In fact, InterDigital has invested more than \$1B in R&D since 2000. InterDigital additionally invests many millions of U.S. dollars supporting the attendance and participation of its engineers in meetings of standards development organizations (“**SDOs**”) (at which InterDigital’s engineers often hold leadership positions). This includes attendance at more than 100 engineering and academic conferences per year.

InterDigital does not manufacture devices (although it builds its own test systems). Instead, the company focuses on innovation through advanced research. InterDigital undertakes research at a more fundamental level than most manufacturers, partnering with many universities in research that is not directly product-oriented. The company has therefore made, and continues to make, a unique contribution to standardization, playing an important role as a company that bridges academic and commercial approaches.

#### *B. InterDigital’s participation in standardization*

InterDigital’s engineers look at the challenges of current technology to identify future issues that will require solutions. SDOs have historically begun developing standardized technologies roughly 7 to 8 years prior to market adoption, but InterDigital often begins its research several years before SDO work begins.

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InterDigital has been involved in mobile standardization since the formation of 3GPP, the mobile industry's central forum, in 1998. InterDigital is also involved in several other SDOs, including ITU, IEEE, TTA, IETF, OMA and oneM2M.

Standards development operates at the leading edge of technology. Within that process, there is strong competition among top engineers from the leading companies in the world to identify and develop the best possible technical solutions, enabling new and better products. This competition promotes innovation, giving rise to significant inventions and driving up the overall quality of the standard itself.

Today, InterDigital is actively working on innovations relevant to 5G and other key technologies, such as edge computing and standards-based machine-to-machine communications. These technologies lead toward the development of dynamic networks that intelligently manage spectrum resource, achieving efficiencies that will greatly increase system capacity and flexibility, thereby enabling networks to accommodate the rapidly growing demand for wireless services.

### *C. InterDigital's business model*

InterDigital's business model is predominantly based on its ability to obtain licensing income from the patent portfolio that protects its innovations. Importantly, InterDigital's wireless technology patent portfolio is primarily the result of internal investment and research, leading to inventions that have been made at and developed by InterDigital. Our long-term investment in working alongside, but often in competition with, other leading innovators participating in SDOs have created a "virtuous circle" in which InterDigital's licensing income is re-invested in further research. As of December 31, 2018, the company held a patent portfolio of more than 36,000 patents and patent applications.

InterDigital has concluded numerous licenses with sophisticated licensees. Many of the company's licenses are to companies that also participate in standardization efforts, with InterDigital's past and current licensees comprising many of the world's most successful technology brands and manufacturers of wireless equipment, including Samsung, HTC, Nokia, Sony / Sony Ericsson, Ericsson, Fujitsu, BlackBerry (formerly Research in Motion), Panasonic, Pantech, Pegatron, Toshiba, NEC and Sharp. Notably, Sony and InterDigital launched a joint venture in 2012 that continues to thrive today, driving new research in the field of machine-to-machine wireless communications and other connectivity areas.

InterDigital has been able to succeed with this business model due to (a) its foresight in identifying the challenges that lie ahead in wireless development and (b) its ability to develop solutions to those

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challenges by virtue of the quality of its research. However, this business model carries significant risk, because such long-term investment decisions commit substantial resources to particular research projects, and there can be no certainty that any given research project will ultimately result in technology that is adopted in a standard or otherwise deployed by the industry.

## **II. Comments on the Waiver**

Built on the foundation of earlier efforts to develop Vehicle-to-Everything (“V2X”) services, C-V2X is a modern, standards-based connected-vehicle communications technology. Leveraging 4G, and ultimately 5G, C-V2X enables direct communications between vehicles themselves, vehicles and vulnerable persons such as pedestrians and cyclists, and vehicles and roadside infrastructure, as well as communications between vehicles and mobile networks. These communications hold the potential to enable important improvements in safety, traffic efficiency, mobility, and energy efficiency on America’s roads.

Unfortunately, the Commission’s current regulations threaten to stifle investment and innovation in C-V2X and threaten America’s ability to play an active role in the progression of this technology. Specifically, the rules governing the 5.9 GHz band, which has been allocated for V2X services, limit operations in the band to those that comply with the Dedicated Short-Range Communications standard. The Commission can begin to remediate this situation by granting 5GAA’s waiver request.

Indeed, the current regulatory regime governing the 5.9 GHz band does not reflect the realities of the V2X marketplace. As 5GAA recently explained to the Commission, V2X stakeholders have reached an inflection point. C-V2X’s advantages, which include capabilities that can enable new and improved ITS services, a path to 5G that will greatly expand and enhance C-V2X services in the future, and an unmatched cost efficiency that will support accelerated deployment, have persuaded many important global stakeholders to commit to C-V2X. For example, the Chinese Ministry of Industry and Information Technology recently adopted a spectrum allocation for C-V2X in China, the world’s largest market for automobile sales. As regulators in other regions of the world consider similar allocation decisions, the United States risks being left behind as this technology continues to progress.

The FCC can help facilitate the advancement of C-V2X in the United States by granting 5GAA’s waiver request. Importantly, the waiver request does not preclude the continued operations of DSRC technology. Rather, it merely will help to update the regulatory regime governing the 5.9 GHz band to better represent the realities of the V2X marketplace and afford interested stakeholders in the United States

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the flexibility to invest and innovate in a technology that is being adopted around the world. Ultimately, American travelers stand to benefit through increased access to safety and other services powered by C-V2X technology.

### **III. Conclusion**

Thank you for providing InterDigital with the opportunity to submit comments on the “5GAA Petition for Waiver to Allow Deployment of Cellular Vehicle-to-Everything (C-V2X) Technology in the 5.9 GHz Band.” As noted above, granting 5GAA’s waiver request to allow for the near-term deployment of Cellular Vehicle-to-Everything technology in the upper 20 megahertz of the 5.9 GHz band better reflects the realities of the current marketplace. If you have any questions about these comments, please contact Robert S. Stien, Vice President, Global Government Relations & Regulatory Affairs, InterDigital, Inc. at [Rob.Stien@InterDigital.com](mailto:Rob.Stien@InterDigital.com) or by telephone at (202)-349-1711.